

NAME Key DATE _____ SCORE _____**Circles; Parabolas**

Find an equation of the circle with the given center and radius.

1. (0, 0), 5 $x^2 + y^2 = 25$

3. (-1, -2), 2 $(x+1)^2 + (y+2)^2 = 4$

5. (3, 5), $\sqrt{3}$ $(x-3)^2 + (y-5)^2 = 3$

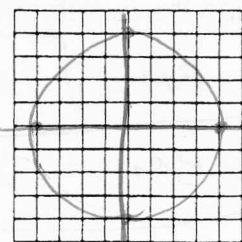
2. (1, 1), 3 $(x-1)^2 + (y-1)^2 = 9$

4. (2, 3), $\frac{1}{2}$ $(x-2)^2 + (y-3)^2 = \frac{1}{4}$

6. (-5, -2), $3\sqrt{2}$ $(x+5)^2 + (y+2)^2 = 18$

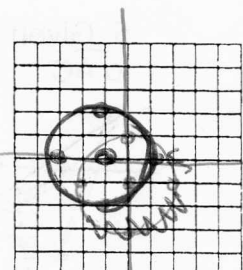
Graph each equation.

7. $x^2 + y^2 = 16$



8. $(x+1)^2 + y^2 = 4$

$C(-1, 0)$



If the given equation has a circle as its graph, find the center and radius. If the equation has no graph, so state.

9. $x^2 + y^2 - 4y - 12 = 0$ $x^2 + (y-2)^2 = 16$
 $C(0, 2)$ $r=4$

10. $x^2 + y^2 - 6x + 4y - 12 = 0$ $(x-3)^2 + (y+2)^2 = 25$
 $C(3, -2)$ $r=5$

11. $x^2 + y^2 - 2x - 2y + 6 = 0$ no
 $x^2 - 2x + 1 + y^2 - 2y + 1 = -6 + 1$

12. $x^2 + y^2 - x - 3y + \frac{39}{16} = 0$ $(x-\frac{1}{2})^2 + (y-\frac{3}{2})^2 = \frac{1}{16}$
 $x^2 - x + \frac{1}{4} + y^2 - 3y + \frac{9}{4} = \frac{-39}{16} + \frac{36}{16} + \frac{4}{16} = \frac{1}{16}$

Find an equation of the parabola described.

13. Focus (1, 0); directrix $x = -3$ $x = \frac{1}{8}(y)^2 - 1$

14. Focus (1, 3); directrix $y = 1$ $y = \frac{1}{4}(x-1)^2 + 2$

15. Focus (0, -3); vertex (2, -3) $x = \frac{1}{8}(y+3)^2 + 2$

16. Focus (-2, 3); vertex (-2, 7) $y = \frac{1}{16}(x+2)^2 + 7$

17. Vertex (5, 1); directrix $x = 3$ $x = \frac{1}{8}(y-1)^2 + 5$

18. Vertex (3, -2); directrix $y = -4$ $y = \frac{1}{8}(x-3)^2 - 2$

Find the vertex, focus, directrix, and axis of symmetry of each parabola. Then graph the parabola.

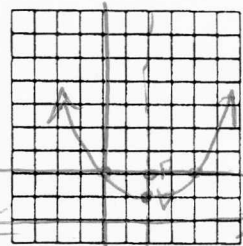
19. $4y = x^2 - 4x$

$V(2, -1)$

$F(2, 0)$

$D(y = -2)$

$axis: x = 2$



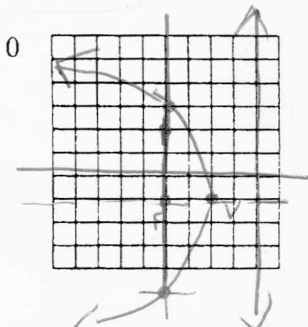
20. $y^2 + 2y + 8x - 15 = 0$

$V(2, -1)$

$F(0, -1)$

$D: x = 4$

$axis: y = -1$



Find the midpoint of the following segments given the endpoints.

1. $(-4, -3)$ $(2, 1)$

$$M(-1, -1)$$

2. $(8, 5)$ $(-3, 1)$

$$M\left(\frac{5}{2}, 3\right)$$

Given \overline{AB} is a segment and M is the midpoint. Find the coordinates of B.

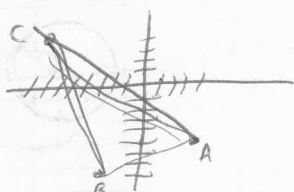
3. $A(-5, 8)$ $M(2, 6)$

$$B(9, 4)$$

4. $A(0, 7)$ $M(3.5, -2)$

$$B(7, -11)$$

5. Given $\triangle ABC$ $A(4, -5)$ $B(-2, -8)$ $C(-8, 4)$. Find the length of the median from B to AC.



$$M(-2, -\frac{1}{2})$$

$$BM = \sqrt{(-2+2)^2 + (-8+\frac{1}{2})^2}$$

$$BM = 7.5$$

6. Find the length of the median from A to \overline{BC} .

$$M(-5, -2)$$

$$AM = \sqrt{(4+5)^2 + (-5+2)^2}$$

$$81 + 9$$

$$\sqrt{90}$$

$$9 \quad 10$$

$$AN = 3\sqrt{10}$$